

NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
JUMPER HARNESS, ITEM 392 ----- SV821756-2 (1)	2/1R	392FM11 Electrical short, status line or program line.  Cable chafing against connector shell or shield. Improper connector strain relief, insulation breakdown.	END ITEM: Short from status line or program line to ground.  GFE INTERFACE: Shutdown of the DC/DC converter when switch is placed in the status or program position. Loss of CWS, tones, and DCM display.  MISSION: None for single failure. Terminate EVA with loss of DCM display, CWS and ability to monitor operational integrity of EMU. Loss of use of one EMU  CREW/VEHICLE: None for single failure. Possible loss of crewman with loss of CCC, vent flow, or oxygen.  TIME TO EFFECT /ACTIONS: Minutes.  TIME AVAILABLE: Minutes.	A. Design - Short circuits in any of the circuits in the item 392 harness are minimized the following: Each connector/adaptor ring interface is locked in place to prevent rotation by a mechanical lock. #24 AWG Teflon insulated wires and connector provide electrical conduction and insulation properties. Connector pins are operating at 56.7% of derated temperature and 4.68% of derated vol and the wire is at less than 1% of derated current. The convoluted tubing provides an additional layer of insulation to prevent shorts between the EM braid and any internal unshielded conductors. The woven Halar sheath is assembled over the internal cables to provide protection from abrasion and impact. Connector pins are insulated by a polyphenylene sulfide insert. Str relief is provided by the combination of convolute tubing, metal EMI braic 0.5" extra cable length. The braided items are secured by a band strap at e connector/cable interface. The convolute tubing is threaded into the connec Wire crimping is performed per SVHS4909 (based on MSFC Spec-Q-1A).  B. Test - Component Acceptance Test - The 392 harness is subjected to acceptance testing per AT-E-392 prior to fi acceptance to ensure there are no workmanship problems that could cause an or short circuit. Each connector/harness interface is subjected to a 9-lb. test. The insulation resistance between each conductor and the ground circ is measured during this test to ensure there are no intermittent shorts and verify the integrity of the harness strain relief. A continuity test is performed to measure the resistance of each circuit to ensure there are no circuits or high resistance paths. The insulation resistance and dielectric strength between each conductor and the shield ground is measured to ensure there are no shorts.  PDA Test - This circuit is not tested during DCM PDA, but is checked at the short EMU testing.  Certification Test - Certified for a useful life of 15 years (ref. EMU1-13-046).  C. Inspection - To ensure that there are no workmanship problems which could cause a short circuit in the harness conductors, the following inspections are made: Cont crimp samples are made prior to start of crimping and at the conclusion of crimping and pull tested to ensure the crimp tooling is operating properly. crimp terminations are inspected for defects. Harness cables and conductors visually inspected prior to assembly to ensure there are no defects which c cause a short due to workmanship. Electrical bond test is performed to veri ground path through various points on the harness. In-process and final electrical checkout of the harness (conductor continuity, dielectric streng and insulation resistance tests) are performed to ensure there are no open, circuits.  D. Failure History - None.  E. Ground Turnaround -

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		TIME REQUIRED: Minutes.	Tested for non-EET processing per FEMU-R-001, Pre-Flight V1103 Performance and Item 113 Regulator Check. FEMU-R-001, Para. 8.2, EMU Pre-flight KSC Checkout for EET processing.
		REDUNDANCY SCREENS: A-PASS B-PASS C-PASS	F. Operational Use - PreEVA: Trouble shoot. If no success, consider third EMU if available. Otherwise, EMU is no go for EVA. EVA: Terminate EVA when detected by ground during crewmember's status check.
			Training - Standard EMU training covers this failure mode. Crewmembers are thoroughly trained in EVA termination and abort procedures using both neutral buoyancy and 1-G techniques.
			Operational Considerations - Flight rule A15.1.2-2 of "Space Shuttle Operational Flight Rules", NSTS-128 defines go/no go criteria related to EMU CWS. Generic EVA Checklist, JSC-4 procedures Section 3 (EMU Checkout) and 4 (EVA prep) verify hardware integrity and systems operational status prior to EVA. Real Time Data System allows ground monitoring of EMU systems.

EXTRAVEHICULAR MOBILITY UNIT  
SYSTEMS SAFETY REVIEW PANEL REVIEW  
FOR THE  
I-392 JUMPER SIGNAL HARNESS  
CRITICAL ITEM LIST (CIL)  
EMU CONTRACT NO. NAS 9-97150

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